

Equipment for NAWQA ground water and surface water studies (updated 10/2/02)

SW	GW		Qty.	Supplier ^a	Product/Model Number	Estimated price	Description
NON-EXPENDABLE EQUIPMENT							
X	X	1liter polypropylene sample bottles	case (6)	VWR	16126-134	\$30.61	autoclavable, for bacteria sample collection and transport
	X	3 liter polypropylene sample bottles	case (6)	Fisher	11-825D	\$75.95	autoclavable, for coliphage sample collection and transport
X	X	alcohol burner	2	Hach	20877-42	\$38.16	fill with methanol for flame sterilizing forceps
X	X	alcohol well	2	Hach	23240-43	\$6.50	containing methanol for forceps
	X	beakers - 250 mL, optional	2	Hach	500-46H	\$17.00	for melting agar. An autoclave may also be used.
X	X	autoclavable squirt bottle for buffer (500 mL), optional	6	Fisher	03-409-14A	\$27.62	to dispense buffer during filtration
X	X	autoclave - large (only one autoclave is needed) ^b	1	VWR	58700-008	\$6,024.00	for sterilization, capable of maintaining 121.6°C
X	X	autoclave - small (only one autoclave is needed) ^b	1	Fisher	02-964-1	\$3,341.00	for sterilization, capable of maintaining 121.6°C
X	X	digital thermometer	1	Fisher	15-077-14	\$85.45	for checking temperature of field incubators
X	X	NIST thermometer	1	Fisher	15-041C	\$178.98	range of -1 to 101°C, National Institute of Standards and Technology
X	X	dual-chamber incubator	1	Millipore	XX632K115	\$2,865.00	capable of maintaining temperature ranges for incubation
X	X	forceps	2	OCALA	Q347BACT	\$16.60	stainless steel, smooth tips
X	X	gloves	1 pair	Fisher	11-394-299	\$12.15	for removal of items from autoclave
X	X	graduated cylinders	case (8)	Fisher	08-570-21D	\$59.37	autoclavable, for measuring sample volumes
X		pipet bulbs	3	Fisher	13-681-51	\$33.96	SW, use to deliver sample; GW, use to prepare cefsulodin soln.
X	X	tally counter	2	Fisher	07-905-6	\$49.80	hand-held for counting bacterial colonies
	X	hot plate (with magnetic stirrer) for media prep, optional	1	Fisher	11-496-21	\$307.02	for melting agar. An autoclave may also be used.
X	X	Leica Zoom 2000 Stereoscope (Model Z45L) ^c	1	VWR	41433012	\$817.76	wide-field for viewing colony growth, 10-20 X magnification
X	X	Portable illuminated magnifiers ^c	1	VWR	36934-107	\$60.00	for viewing colony growth, 7 X magnification
X	X	manifold	1	Gelman	4205	\$576.00	for holding filtration units during filtration
	X	membrane filtration units (for GW, additional units may be needed)	3	Gelman	4242	\$435.00	autoclavable, for filtering samples
X	X	peristaltic pump (should already have for GW sampling)	1	Geotech	81350004	\$688.50	vacuum source, not to exceed 5 psi
X	X	pump head-easy load (should already have for GW sampl	1	Geotech	81350021	\$190.00	needed to run pump
X	X	tubing for filter flask/manifold: Masterflex sizes 15	1	Geotech	87050000	\$58.75	to connect manifold to peristaltic pump (\$2.35/ft for 25 ft)
	X	longwave ultraviolet lamp (366nm)	1	Spectronics Corp.	EN-160L	\$103.70	for use with the MI method (total coliforms)
	X	UV lamp viewing box	1	Spectronics Corp.	CM-10	\$175.00	for use with the MI method (total coliforms)

SW	GW		Qty.	Supplier ^a	Product/Model Number	Estimated price	Description
EXPENDABLE EQUIPMENT/SUPPLIES							
X		1 mL pipets, sterile, to deliver (TD)	case (200)	OCALA	Q8BACT	\$63.05	sterile, disposable, used to deliver sample
X		10 mL pipets, sterile, to deliver (TD)	case (100)	OCALA	Q9BACT	\$54.30	sterile, disposable, used to deliver sample
X		25 mL pipets, sterile, to deliver (TD)	case (100)	OCALA	Q10BACT	\$139.50	sterile, disposable, used to deliver sample
X	X	aluminum foil for sterilization (15 in. by 1000 ft.)	1 box	GSA	8135-00-724-0552	\$44.68	for maintaining sterility of equipment after autoclaving
X	X	autoclave bags	300	Fisher	01-830A	\$29.80	for disposal of used plates and other contaminated items
	X	ethanol	1 gallon	VWR	RC65901	\$35.00	for sterilizing the spigot on sampling wells
X	X	handsoap	2 bottles	VWR	56614-420	\$34.10	for wahing hands
X	X	Liquinox	1 bottle	Fisher	04-322-15A	\$7.52	for cleaning dishes
X	X	marking pens, color-coded tape	as needed	Fisher	approx.	\$30.00	labeling petri dishes, buffer, and dilution bottles
X	X	membrane filters - 0.45 µm pore size, 47mm diameter ^d	2 boxes	OCALA	Q353BACT	\$48.50	sterile, with grids, disposable
X	X	methanol	1 liter	VWR	EM-MX0475-1	\$42.28	for use with burner
	X	9x50mm sterile, perti dishes ^d	3 boxes	OCALA	Q5BACT	\$46.05	sterile, plastic, disposable
		MI agar with cefsulodin (50 mL bottles) ^{d,e}					
X		PREFERED SUPPLIER FOR MI AGAR	10 bottles	S&S Microscience	10496847	\$140.00	media for determination/enumeration of <i>E. coli</i> and total coliforms
		MI agar with vials for cefsulodin preparation (100 mL) ^d					media for determination/enumeration of <i>E. coli</i> and total
X		ALTERNATE SUPPLIER FOR MI AGAR	5 bottles	USGS-OH		\$180.00	coliforms; order if MI is not available from S&S Microscience
X		modified mTEC agar (pre-poured plates) ^{d,f}	275 plates	Hach	28118-01	\$825.00	media for determination/enumeration of <i>E. coli</i>
X		sterile buffered water, saline (250 mL bottles)	4 boxes (8)	OCALA	Q373BACT	\$108.00	buffer water for rinsing and quality control samples
X		dilution blanks, saline, (99 mL bottles)	2 boxes (12)	OCALA	Q421BACT	\$72.00	for preparing a dilution series
	X	sterile buffered water PO4/MgCl ₂ (250 mL bottles) ^d	3 boxes (8)	OCALA	Q453BACT	\$81.00	buffer water for rinsing and quality control samples
X	X	rubbing alcohol for benchtop cleanup	1 bottle	grocery store	-	\$2.00	for cleaning work surfaces
X	X	biological indicators for autoclave QC	3 packs	Fisher	14-490-25	\$44.82	quality control: to monitor sterilization capabilities of autoclave
X	X	sterilization tape	pack (12)	VWR	36432-186	\$39.60	quality control: to monitor sterilization capabilities of autoclave
X		Positive control culture for NAWQA SW	1	USGS-OH		headquarters	<i>Escherichia coli</i> culture in saline buffer
	X	Positive and negative control cultures for NAWQA GW	3	USGS-OH		purchase	<i>Escherichia coli</i> and <i>Pseudmonas</i> cultures in saline buffer

^aThe list of supplier is for your convenience. Other suppliers may be used.

^b A large autoclave is preferred but is more expensive than a small one and requires proper installation. The small autoclave is suitable for SW sampling where only 1-L bottles are used; for GW, 3-L sample bottles are needed for coliphage and only one can fit at one time in the small autoclave.

^cAlthough the Stereoscope is preferred, the Portable illuminated magnifier is an adequate substitute.

^d Quantity depends on the number of samples to be collected. Quantity specified is suitable for approximately 30 GW or 45 SW samples and related QC.

^e Perishable - order as needed. Recommended holding time for the USGS is 45 days after receipt (although manufacturer states a holding time of 3 months).

^f Hach plates are presently produced on plates that are too large to fit in old blue incubators. If you purchase the new incubator listed above, plates will fit okay. If you have the old blue incubators, you need to obtain plates from a custom order for the USGS on the smaller plates. Contact the Ohio District about arranging for a custom order.

Fisher 800/766-7000 S&S Microscience, Inc. 800/645-2302 x20 (Lisa)
Gelman 800/521-1520 Spectronics Corp. 800/274-8888 Millipore 800/645-5476
Geotech 800/833-7958 USGS-OH 614/4307700 VWR 800/932-5000
GSA 800/525-8027 Hach 800/227-4224